WHAT IS CLAIMED IS:

5   1.   A method for operating a vocoder system, the method comprising:

receiving a first negative acknowledgement from a receiving communication device indicative of a corrupted first speech packet transmission;

retrieving a first speech packet associated with the first negative acknowledgement;

10   compressing the first speech packet to form a replacement speech packet;

encoding a current segment of speech responsive to the first negative acknowledgement to form a current speech packet;

combining the current speech packet with the replacement speech

15   packet to form a combined speech packet; and

transmitting the combined speech packet.

2.   The method of claim 1, wherein the current segment of speech is encoded at a second rate.

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3.   The method of claim 1, wherein the first speech packet is encoded at a first rate and the replacement speech packet is compressed at a second rate.

25   4.   The method of claim 1, wherein receiving a first negative acknowledgement from the receiving communication device indicative of a corrupted first speech packet transmission further comprises:

determining the first speech packet is corrupted at a receiver buffer of the receiving communication device; and

30   transmitting the first negative acknowledgement to an initiating communication device.

5.   The method of claim 1, wherein retrieving the first speech packet associated with the first negative acknowledgement further comprises:

determining a sequence number m of the corrupted speech packet
referenced by the first negative acknowledgement;

retrieving the first speech packet from a buffer in an initiating
communication device; and

determining if a data rate of the retrieved first speech packet is a
first rate.

6.   The method of claim 5 wherein determining the sequence number m further comprises:

determining a receive time of the first negative acknowledgement.

7.   The method of claim 5, further comprising:

determining whether a preceding speech packet has been received
at the receiving communication device.

8.   The method of claim 7, wherein determining whether a preceding speech packet has been received at the receiving communication device further comprises:

determining if a second negative acknowledgement was received
for the preceding speech packet having a sequence number m-1; and

recovering speech parameters for the preceding packet if the
second negative acknowledgement was not received for the preceding speech
packet.

9. The method of claim 8, wherein compressing the first speech packet to form a replacement speech packet, further comprises:

stripping speech parameters from the retrieved first speech packet;

5   generating replacement speech parameters from the stripped speech parameters from the retrieved first speech packet and the recovered speech parameters from the preceding speech packet; and

applying the generated replacement speech parameters to the stripped retrieved first speech packet to form the replacement speech packet.

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10. The method of 9, wherein the stripped parameters include line spectral pairs.

11. The method of claim 1, wherein encoding a current segment of
15 speech responsive to the first negative acknowledgement to form a current speech packet further comprises:

triggering a control signal to initiate a recompression/rate reduction algorithm responsive to the first negative acknowledgement;

sending the control signal to a speech encoder; and

20   encoding the current speech packet by applying a rate reduction algorithm.

12. The method of claim 1 wherein transmitting the combined speech packet further comprises:

25   embedding traffic type information to indicate the presence of the replacement speech packet and the current speech packet.

13. The method of claim 12, wherein the traffic type information comprises of primary traffic indication and secondary traffic indication.

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14.   A method of operating a vocoder system, the method comprising:

receiving a combined speech packet at a receiving communication device, wherein the combined speech packet comprises a current speech packet

5   and a replacement speech packet and wherein the replacement speech packet is formed by stripping speech parameters from a first speech packet, generating replacement speech parameters using the stripped speech parameters from the first speech packet and the speech parameters from a preceding speech packet, and applying the generated speech parameters to the replacement speech

10   packet;

stripping the replacement speech packet from the combined speech packet;

stripping the current speech packet from the combined speech packet;

15   placing the current speech packet in a receiver buffer;

sequencing the stripped replacement speech packet in sequential position with speech packets leaving the receiver buffer;

sending the sequenced replacement speech packet to a speech decoder; and

20   decoding the sequenced replacement speech packet.

15.   The method of claim 14, wherein the current speech packet is encoded at a second rate.

25   16.   The method of claim 14, wherein the receiving communication device is a cellular phone.

17.   The method of claim 14, wherein the receiving communication device is a wireless base station controller.

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18.   The method of claim 17, further comprising:

transmitting the decoded replacement speech packet to a land communication device.

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19.   A method for forming a combined packet, the method comprising:

encoding a current speech segment at a substantially half rate;

retrieving a first speech packet;

compressing the first speech packet to a substantially half rate; and

10   combining the encoded current speech segment and the

compressed first speech packet to form a full rate replacement packet.

20.   The method of claim 19, wherein compressing the first speech packet, further comprises:

15   retrieving a speech packet from a buffer in a second slot;

retrieving a prior speech packet from the buffer in a first slot immediately preceding the second slot;

stripping speech parameters from the retrieved prior speech packet;

20   stripping speech parameters from the retrieved speech packet;

discerning a difference between the speech parameters stripped from the retrieved prior speech packet and the speech parameters stripped from the retrieved speech;

forming modified speech parameters based on the discerned

25   difference between the speech parameters stripped from the retrieved prior speech packet and the speech parameters stripped from the retrieved speech packet; and

encoding the retrieved speech packet with the modified speech parameters.

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21.   A computer usable medium storing a computer program for operating a vocoder system comprising:

computer readable code for receiving a first negative
5   acknowledgement from a receiving communication device indicative of a corrupted first speech packet transmission;

computer readable code for retrieving a first speech packet associated with the first negative acknowledgement;

computer readable code for compressing the first speech packet to
10   form a replacement speech packet;

computer readable code for encoding a current segment of speech responsive to the first negative acknowledgement to form a current speech packet;

computer readable code for combining the current speech packet
15   with the replacement speech packet to form a combined speech packet; and

computer readable code for transmitting the combined speech packet.

22.   The computer usable medium storing a computer program of claim
20   21, further comprising:

computer readable code for determining the first speech packet is corrupted at a receiver buffer of the receiving communication device; and

computer readable code for transmitting the first negative acknowledgement to an initiating communication device.

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23. The computer usable medium storing a computer program of claim 21, further comprising:

computer readable code for determining a sequence number m of the corrupted speech packet referenced by the first negative acknowledgement;

computer readable code for retrieving the first speech packet from a buffer in an initiating communication device; and

computer readable code for determining if a data rate of the retrieved speech packet is a first rate.

24. The computer usable medium storing a computer program of claim 23, further comprising:

computer readable code for determining a receive time of the first negative acknowledgement.

25. The computer usable medium storing a computer program of claim 23, further comprising:

computer readable code for determining whether a preceding speech packet has been received at the receiving communication device.

26. The computer usable medium storing a computer program of claim 25, further comprising:

computer readable code for determining if a second negative acknowledgement was received for the preceding speech packet having a sequence number m-1; and

computer readable code for recovering speech parameters for the preceding packet if the second negative acknowledgement was not received for the preceding speech packet.

27. The computer usable medium storing a computer program of claim 26, further comprising:

        computer readable code for stripping speech parameters from the retrieved first speech packet;

        computer readable code for generating replacement speech parameters from the stripped speech parameters from the retrieved first speech packet and the recovered speech parameters from the preceding speech packet; and

        computer readable code for applying the generated replacement speech parameters to the stripped retrieved first speech packet to form the replacement speech packet.

28. The computer usable medium storing a computer program of claim 21, further comprising:

        computer readable code for triggering a control signal to initiate a recompression/rate reduction algorithm responsive to the first negative acknowledgement;

        computer readable code for sending the control signal to a speech encoder; and

        computer readable code for encoding the current speech packet by applying a rate reduction algorithm.

29. The computer usable medium storing a computer program of claim 21, further comprising:

        computer readable code for embedding traffic type information to indicate the presence of the replacement speech packet and the current speech packet.

30.   A computer usable medium storing a computer program for operating a vocoder system comprising:

computer readable code for receiving a combined speech packet at a receiving communication device, wherein the combined speech packet comprises a current speech packet and a replacement speech packet;

computer readable code for stripping the replacement speech packet from the combined speech packet;

computer readable code for stripping the current speech packet from the combined speech packet;

computer readable code for placing the current speech packet in a receiver buffer;

computer readable code for sequencing the stripped replacement speech packet in sequential position with speech packets leaving the receiver buffer;

computer readable code for sending the sequenced replacement speech packet to a speech decoder; and

computer readable code for decoding the sequenced replacement speech packet.

31.   A computer usable medium storing a computer program for forming a combined packet comprising:

computer readable code for encoding a current speech segment at a substantially half rate;

computer readable code for retrieving a first speech packet;

computer readable code for compressing the first speech packet to a substantially half rate; and

computer readable code for combining the encoded current speech segment and the compressed first speech packet to form a full rate combined packet.

32.   The computer usable medium storing a computer program of claim
31, further comprising:

computer readable code for retrieving a speech packet from a
5   buffer in a second slot;

computer readable code for retrieving a prior speech packet from
the buffer in a first slot immediately preceding the second slot;

computer readable code for stripping speech parameters from the
retrieved prior speech packet;

10   computer readable code for stripping speech parameters from the
retrieved speech packet;

computer readable code for discerning a difference between the
speech parameters stripped from the retrieved prior speech packet and the
speech parameters stripped from the retrieved speech;

15   computer readable code for forming modified speech parameters
based on the discerned difference between the speech parameters stripped
from the retrieved prior speech packet and the speech parameters stripped from
the retrieved speech packet; and

computer readable code for encoding the retrieved speech packet
20   with the modified speech parameters.